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VOLUME L MARCH, 1951 NUMBER 3

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VOLUME L MARCH, 1951 NUMBER 3

PUERTO RICO'S AMBITION

LUELLA N. DAMBAUGH
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Travel five hours by air in an east-southeast direction from Miami and you will be flying along the north shore of the most talked-about island in the Caribbean, namely, Puerto Rico. It is going to claim the limelight for many years to come for it offers a challenge for the application of demographic, social and economic theory in efforts to raise the level of living and bring happiness to all concerned.

POPULATION

The Americans who inhabit this little island of only 3,423 square miles numbered 2,182,000 as of January, 1948, i.e., a density of 638 per square mile. If the United States were that densely populated, it would have to make room for 2,360,600,000 people, or almost sixteen times as many people as the 1950 census enumerated. A more meaningful statistic is the population per square mile of farm land, since agriculture is the basis of the Puerto Rican economy, and also because 82 per cent of the total land area is in farms. There are 1705 persons per square mile of farm land, or 2.6 people per acre, or a little more than one-third of an acre per person. This idea might be amplified still further if the quality of the farm land is considered. Only 8.1 per cent of the lands fall into the highest two classes of a 10-class productivity scale, and constitute really good, erosion-free lands, but 71.7 per cent of the total are found in classes 6 to 10, or less than average productivity. Puerto Rico is one of the most crowded areas in the world. The greatest densities are found in the agricultural areas producing vegetables for urban markets, in the cane lands, and the industrial areas.

Puerto Rico has one of the highest rates of natural increase in the world, according to a table compiled by Perloff of 53 nations each with a population of over a half million. Between 1936 and 1940

the rate of natural increase in Puerto Rico was 20.0 per 1000 people (31.3 in 1947). Only Mexico with 20.5, El Salvador with 23.0, Palestine with 23.2, Costa Rica with 24.6 and Formosa with 24.8 had higher rates of natural increase. This fact alone bears little weight unless it is related to the quantity and distribution of natural resources and the effectiveness with which they are utilized, the character of the farming, and the degree of industrialization. Some countries that are densely populated have industrialized economies, as for example, England and Wales, Switzerland, Belgium, Japan, Italy, and Northeastern United States. Each of these areas has a high level of income and a low rate of natural increase in population. Puerto Rico does not fit into this category.

The population trends in Puerto Rico indicate a rapid expansion during the next two or three decades. The birth rate is still high, 43.3 per 1000 in 1947. The death rate dropped from an average of 19.2 per 1000 for the 1936-40 period to 12.0 per 1000 in 1947. The expectation of life at birth has augmented from 38.4 years in 1910 to 46.0 years in 1940. Emigration from the island has reached sizeable proportions since the end of World War II. These basic population facts will condition all plans for Puerto Rico's future. The population projections, based on survival and reproduction rates for the 1939-41 period, and adding the condition that net out-migration will continue at the average rate of the decade 1937-46, indicated the population by 1960 to be 2,678,000, by 1970—3,121,000, and by 1980—3,637,000. Or, by 1980 the population will have doubled the 1940 figure of 1,869,255 . . . a really staggering growth!

LAND USE

How are these Puerto Ricans using their land? Fifty-three per cent of the land in farms in 1945 were in crops, and another 35 per cent in pastures. Sugarcane made up one-third of the crop acreage, starchy vegetables another one-fourth, and the remaining portion was devoted to coffee, cereals, legumes, tobacco, forage crops, and other lesser categories—named in descending order. Sugarcane is grown on all the best lands in the island, that is, the comparatively level alluvial coastal plains and terraces, and along the narrow river floodplains (Fig. 1). The most valuable cane lands are the irrigated acreages on the southern littoral with Ponce as the commercial nucleus. Cane yields are highest and a greater economic return is derived from the production and sale of cane than

from any other crop which may suit these same climatic and soil conditions. The returns from an acre of sugar will buy, on an average, several times as much food as the same land will grow in food crops. On the basis of 1938 yields and prices, the returns from one acre of sugarcane would buy the production of from 4 to 12 acres of other crops produced in the island, and on the basis of the island's purchases of wheat flour, corn and corn meal, rice, potatoes, beans and peas, the products from more than 8 acres in the mainland.

FIG. 1. Sugar harvest near Ponce. (Courtesy of the Government of Puerto Rico.)

On the basis of wages, which are highest in cane areas, the wages paid to a sugar laborer in growing one acre of sugar in 1938 would have bought the crops from 2 acres planted in any other local food crop. It would have bought about 3 acres of *yautías* and dried beans, nearly 4 acres of pigeon peas and rice, and nearly 6 acres of corn.

Sugarcane has also climbed some of the steepest slopes imaginable. Yields of cane vary considerably thruout the island. A reduction in total cane acreage thru a retirement of less productive lands is sound reasoning.

Starchy vegetables—potatoes, sweet potatoes, plantains, taniers (*yautía*), dasheen (*malanga*), cassava (*yuca*), green bananas, and yams (*ñames*)—are grown in small plots all over the island's interior, and especially on areas of irregular terrain. Plots of tobacco are raised in the southern highlands, chiefly around Cayey and Aibonito. Some of these small farm plots cling to slopes well over

FIG. 2. Valuable pineapple field in the northern littoral near Arecibo. (Courtesy, Author.)

100 per cent. The tobacco is air cured and the drying shed is the largest building that can be seen in the rural areas, with the single exception of the sugar mill. They vary from completely thatched shacks to a well-constructed elongated wooden structure with open side slats.

The coffee is shade grown and produced chiefly on the steep slopes in the western half of the island. Pineapples are another cash crop. In gross return per *cuerda* (.9712 acre) in 1945, pineapples amounted to $700 per *cuerda,* sugarcane $236, tobacco $187 and coffee only $32. The pineapple industry vies with sugarcane for use of the fertile lowlands east of Arecibo (Fig. 2). Some corn is grown on the less rainy slopes on the southern side of the island. Large coconut fincas use land around Humacao and Loíza Aldea

(Fig. 3). The dairying industry and the production of leafy green vegetables can be seen only in a few chosen spots in the island. In the case of dairying most of the foodstuffs have to be imported, and thus it results in a high-cost industry. The traditional diet of the *jíbaro* is unbalanced and does not include protective foods. He consumes mainly rice, beans and dried cod fish.

FOOD MUST BE IMPORTED

Considering this pattern of agricultural land use it is not surprising to learn that Puerto Rico is not self sustaining in food production. About 32 per cent of the total value of all imports in 1946-47 were edible products. Rice, wheat flour, pork products and fish have remained the island's major food imports since the turn of the century. About 46 per cent in value and 58 per cent in volume of foodstuffs consumed in the island are imported, chiefly from continental United States. In general, the starchy vegetables yield the highest per acre return in terms of food value, so they are produced at home. Some of the foodstuffs high on the list

FIG. 3. A large coconut finca near Humacao. (Courtesy, Author.)

of imports might be grown economically in the island providing readjustments are made in the pattern of land utilization, especially is this true of rice, vegetables, beans and peas.

The industrial uses of land, excepting sugar mills, are confined to the urban areas, with the greatest concentration in and around San Juan. In the Río Piedras area are clay products, brick, tile,

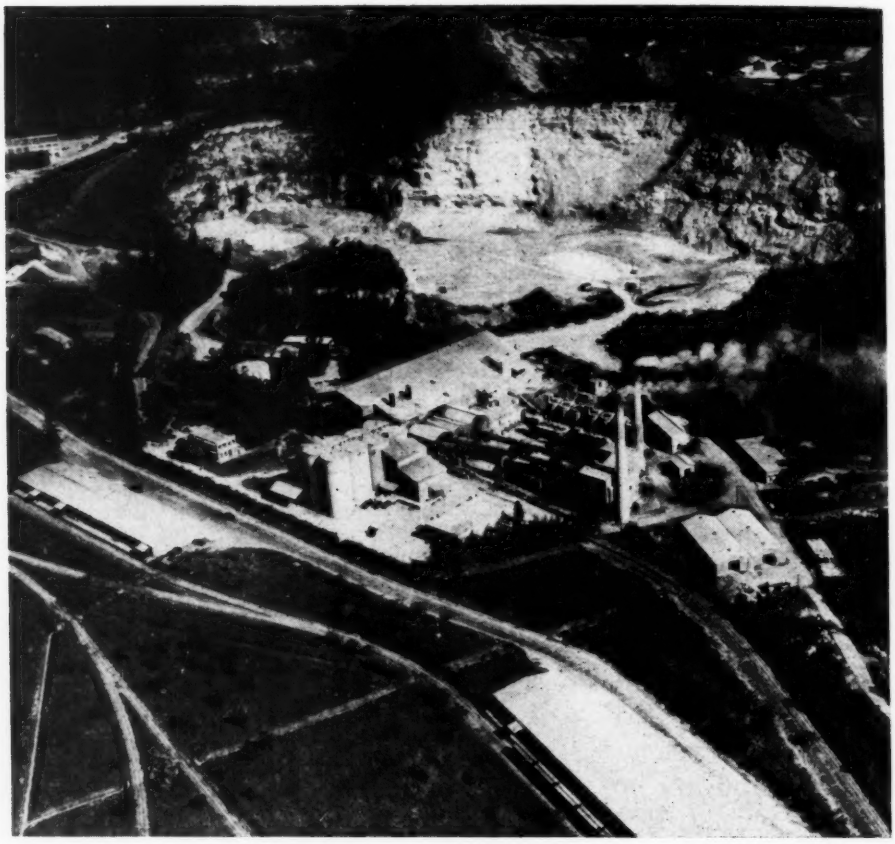

Fig. 4. Cement plant near Bayamon. (Courtesy of the Government of Puerto Rico.)

sanitary ware, ceramics, yeast, and tile plants; and in the Bayamón area are the cement (Fig. 4), glass, paper and textile mills. With the exception of the textile mills these plants are using largely local raw materials—clays, sands, limestones, fibers and molasses.

Twenty-three of the 27 *municipios* are said to have industries. A few plants are large, but many are small and turn out light products. The needlework industry is centered in Mayaguez (Fig.

5). Two industrial areas are being developed: one to the west of San Juan to Arecibo for heavy industry, and the other from San Juan to Humacao for lighter products such as artificial flowers and toys.

PROBLEMS POSED BY GEOGRAPHY OF ISLAND

The problems posed by the geography of the island are many—social, economic and even political. Probably the most fundamental

FIG. 5. These young ladies are carrying on the art of fine handkerchief making in Moca, Puerto Rico. A large amount of the work is carried on in the homes. The handicraft industry is the second largest industry in the island considering the total value of the output. (Courtesy, Pan American World Airways System.)

one, and certainly the most humanitarian of all, is the dilemma presented by the rapid growth in population in an area with definite limitations as to resources that can be utilized for agricultural and manufactural purposes. On the basis of the population trends already cited, the acreage of farmland per person will show a further

reduction of one-third acre per person by 1960 and one-fourth acre per person by 1980.

The level of living is very low. The average weekly wage of the agricultural worker in 1945 was $5.00, and in manufacturing the average was $12.00 (U.S.—$47.50). Agricultural laborers constitute one-third of the employed workers and are among the lowest paid workers. Wages are higher than in the neighboring islands, but far below those in the mainland. The average per capita income in 1939-40 was $140 (U.S.—$691), and the purchases of most of the families is limited to the basic necessities. Forty-five per cent of the expenditures went for food, beverages and tobacco, another 14 per cent for housing and utilities, another 10 per cent each for clothing, for household equipment, and for transportation. Very little, if any, remained to be spent on manufactured goods, personal and professional services.

Unemployment and underemployment so typical of a monocultural economy that is producing a perennial cash crop for an overseas market is strikingly in evidence in the island. The peak employment period in cane production is between mid-January and mid-May. It falls in the late autumn months in the coffee areas and slightly longer in the tobacco regions. Moreover, January thru June is the peak employment period in manufacturing. With the increasing number of young adults, 63 per cent of the population were under 24 years of age in 1948; there are not enough jobs to go around. And no matter within what political framework Puerto Rico finds itself—whether it be Statehood, Independence, or Dominion status—the underlying problem remains that of providing enough work to allow each person to utilize fully his productive capacity.

Rational Solution to Geographic Problems

The intelligentsia is informed. They are aware of the situation and are putting forth constructive efforts to solve the problem at its source. Their slogan "Operation Bootstrap" is very fitting and proper.

Careful land use planning is going forward. Efforts are being made to retire marginal and submarginal lands from the plow. Cane lands may be reduced in acreage allowing production to be increased on optimum lands thru the use of better varieties, more fertilizers, and mechanization of field operations. The coffee acreage might well be reduced also for it is a neglected crop, and per-

mit these lands to be reforested. Considering the erosion that results on tobacco lands and the fact that tobacco cannot compete with Cuban or other tobacco on the world market would justify a diminution of acreage in that crop. The acreage of starchy vegetables should also be diminished. Certain areas now in idleness or in pastures, swamps that could be reclaimed, and lands that could grow foodstuffs if irrigated, would add to the total farmable land, but on a higher level than the existing pattern of production. Scientific farm management would have a chance to function. Specifically, there are areas in the south, southwestern and northwestern coastal zones, and in the Coamo Valley with irrigation, which would lend themselves to intensive agriculture.

The *jíbaro* needs to be taught what to plant, how to plant it and the values to be derived from a better diet. Inroads along these lines are being made thru the work of the Agricultural Extension Stations. The Land Law of 1941 provided for the enforcement of the 500-Acre law, and has ended huge corporate land holdings. The Land Authority has used the land it has acquired to establish proportional profit farms, small owner-operated farms, and to give subsistence plots to the *agregados*. By July 1947 it had settled some 15,000 families on small plots from one-fourth to 3 acres in size.

There is a close tieup between agriculture and manufacturing and this relationship should be strengthened. The agricultural laborer supplies most of the labor pool, and as improvements are made in farming migration to the cities will continue. They must be trained for jobs in industry, and industry must be ready to receive them. Many new products, based on raw materials from the farm, could be put on the market as well as the importation of many foodstuffs in bulk, which is cheaper, and the processing and packaging of them in the island. In general, those manufacturing establishments that utilize an abundance of labor, hydroelectric power and limited raw materials would do well in the island.

The Industrial Development Company was created early in 1942 to develop the natural and human resources of the island, and to coordinate efforts toward industrialization and the diversification of the economy. It considers each addition to the population not as one more mouth to feed, but as two hands to work. From 1942 to 1945 was referred to as the "pump priming" period when direct aid was given to industry. The IDC not only built, but operated the plants that produced glass containers, paperboard, cement, ceramics and shoes. During the second phase between 1945 and

1947 the IDC constructed factories and sold or leased them to private business. And during the third phase, 1947 to date, the IDC is encouraging private industry to develop new plants under the Tax Holiday Act of May 12, 1947. This law offers new industry a blanket exemption from income, property and municipal taxes until June 30, 1959. The tax holiday was later extended to June 30, 1962—a 15-year span, of which only the last 3 years are to be taxable on a graduated scale. The Textron Company built a very large textile mill in Ponce that has been in operation since 1949. The Beacon Manufacturing Company has a textile plant at Mabí, east of San Juan, nearing completion. The new Caribe Hilton Hotel also took advantage of the tax holiday. Industrialization is going forward rapidly. The IDC has brought about 50 new industries to the island.

Education of the people should accompany and supplement the agricultural readjustments and industrialization advances if the social values causing a reduction in the rate of natural increase are to follow.

According to a study made by Roberts education seems to become an effective force in family limitation only after the mother has had at least 6 to 8 years of schooling. Perhaps this is a more immediate check on population than income for the same study revealed that the decline reaches significant proportions only in families with $2000 or more income.

Along with this general education must go technical training. The largest and best equipped vocational school of its kind in the world, Escuela de Artes Industriales, trains young men over a period of two years in ten trades. It was opened August 2, 1948. It has a capacity for 3000 students. Other industrial schools and on-the-job training programs are helping along technical lines.

Puerto Rico is well aware of her dilemma and has laid the groundwork for a functional and rational solution of the problem. She is rapidly acquiring the technical know-how and the scientific tools and equipment to improve agriculture and to expand her industrial machine, and to raise real income and the level of living. The delicate balance necessary between the implementation of scientific knowledge and technology to industry and a diminution in the rate of natural increase is their objective. The world is watching and waiting to evaluate critically the success or failure of Puerto Rico to realize her ambition.

TEACHING CONSERVATION IN THE ELEMENTARY SCHOOL*

JAMES M. SANDERS
Chicago Teachers College

"Neither children nor adults seek to preserve that which they do not understand or appreciate."—Hissing, Ohio State Department of Education.

From what possible sources may we augment our knowledge of conservation? Many funds of information are available. Altho there is much overlapping there are some sources specifically for the teacher and some for the use of the pupil. Education of the pupil is also education of the parent and the community so a third category of educable adult persons is automatically cared for. We have to reach this group thru the children since there is no other medium that we as teachers may influence so readily. If the children do not convince their community we have failed to attain our ideal or ultimate goal. Highly specialized and technical activities and publications of professional conservationists other than for general educational purposes will be largely neglected here.

Sources for the teacher are: special courses,[1,2] conferences,[3] workshops,[4] books, pamphlets, and magazines, and membership in organizations. Everyone teaching elementary science needs the stimulus received from being an active member in at least one organization which has as its primary purpose or function aiding and practising conservation while disseminating information to the public at the same time.

Sources for the pupil are: books, cartoons, films and film strips, pamphlets, transcriptions, radio programs, television programs, and experiences at the aquarium, camps, day camps, farm, forest preserves, museums, parks and zoos. Children may take part in national organizations such as Boy Scouts, Girl Scouts, Junior Audubon Clubs, Junior Defenders of Furbearers, Junior Red Cross, 4H Clubs, Junior Academy of Science, National Science Clubs, Junior Conservation Clubs, and organizations of local scope and interest.

In the Chicago Board of Education course of study in science, some phase or phases of conservation are outlined for presentation in every elementary grade. Due to the fact that arithmetic and

* Presented at the joint session of the National Council of Geography Teachers and the Central Association of Science and Mathematics Teachers, Chicago, November 25, 1950.

science are included together on the time allotment sheet, presentation of science as such may be slighted since the children are given standardized progress tests in arithmetic but not in science. Hence the area in which children should learn *basic survival patterns* may receive less attention than it deserves, especially in view of the unjustifiable fear which many elementary teachers have for the entire science areas.[5] According to Heiss et al.,[6] health, safety, conservation and consumership are of approximate or equal importance to the pupil. None of the other categories mentioned may be completely divorced from conservation.

The actual details of classroom presentation or development of the subject of conservation will receive little attention in this paper. In Parker Elementary School where science is partially departmentalized a general plan which will be described briefly was used.

In addition to suggestions from the course of study and those developed by the teacher and pupils in class and discussion, nine approaches or schemes were used, namely:

1. The organization and use of an all school science club which was affiliated with the National Science Clubs. In some of the sessions special conservation interests were covered in general discussion. The club also published a journal in mimeograph form, one issue of which was devoted to conservation.

2. A few children were selected to help gather black locust seed pods and the entire room shelled them out. Some of these were planted in the college greenhouse so the children could see the seedlings. They were informed of the subsequent use of the sprouts in a tree planting program on waste land. The remaining seeds will also be used in a similar project.

3. The plant group of the science club as well as one regular classroom group were taken into the college greenhouse and given an entire room for their use in growing plants. This resulted in these children calling themselves also a special society for the prevention of glass breakage in the greenhouse. We regret that so far this has not been nearly as successful nor effective as the Cleveland Park Protection Clubs[7] but we have had only one year's trial. There are a few parents in the immediate vicinity who are aggressive in helping protect the greenhouse from depredations. Children with plots in the building manifested emotions from tears to wild fury as they discovered their precious plants damaged by broken glass. At the end of the school year there was not a general school garden exhibit;[8] instead, on Mother's Day the children potted spe-

cial plants to take home. They also presented each classroom in school with plants for tables and windowsills. These were prideful days for the children who had plants to give away.

4. An unsuccessful attempt was made to beautify the school grounds.[9] Its failure was due to very heavy rains and to non-cooperation of the surrounding community which uses the school grounds as a picnic and recreational area.

5. A special attempt was made to interest the children in summer activities or hobbies to be based on vacant lot or waste-land studies as a part of the outdoor laboratory idea.[10] The results of these projects are difficult to evaluate but at least the children became aware of weeds, rats, dumping and erosion, all evidences of carelessness and neglect and of neighborhood aquiescence in the gradual evolution of slum conditions. For pupils to learn to recognize this and to realize its significance is of great social value.

6.* Only one formal field trip was made during the year.[11] An entire classroom visited the John Harding Museum. True the exhibit was of weapons and armor but science correlations were made in pointing out the time and cost of manufacture, the methods of manufacture, the small size because of disease and malnutrition of the great nobles who could afford armor, the social position of a privileged group, and finally the fact that a modern boy with a small caliber rifle or a good bow would be more than a match for the most gallant knight of feudal times. Such an educational opportunity never fails in arousing interest and the children learn without conscious effort. Transportation is something of a problem in Chicago since in some localities it is difficult to collect transportation costs from children. The greatest limiting factor is distance and travel time required to get to a particular location. There are some parent groups at Parker which take the children to museums, lectures, movies and such on Saturdays. These occasions are cooperatively planned and directed. There is no overall program sponsored by P.T.A. or similar school organization. There is also some club activity where older children form Saturday and Sunday groups and invite younger friends along to zoos, parks, the planetarium, collection hunts and bird study hikes.

7. General school programs were arranged with colored sound films presented by one of the naturalists of the Cook County Forest

* Chicago Natural History Museum provides guided tours to fit units in the science course of study for grade seven on "Trees and Forestry," "Water," and "Simple Machines" all of which relate to conservation.

Preserve District. This outstanding service is a very effective community activity in conservation especially when the pupils can be taken out into living areas. This service is available to any school in Chicago or the Cook County area as a free activity. The Chicago Natural History Museum also generously provides able speakers and valuable films on many subjects correlated with Chicagoland science. These too are free and available by request. The museum science exhibit cases which are placed in schools and periodically exchanged are also valuable aids to conservation teaching.

8. The climatic effect of science club activities was an all school science show set up by Mrs. Muriel Beuschlein, representatives of the different science club groups, and the pupils of room 304. These latter also acted as guides and demonstrators. The entire school visited the show, room by room, to the accompaniment of background music of the Cornell University recordings of bird calls and amphibian songs. It was startling and revealing to watch a city child, who perhaps had never been away from pavements, with a live snake draped around her neck and having a wonderful time with all sorts of living things from molluscs and arthropods to mammals. The show lasted two days and went off without a hitch with even the teachers from the other rooms enjoying it.

9. As a summary or review of both class and club activities a general assembly program on all phases of conservation was presented by the children from the science department. Various pupils spoke briefly about ideas delineated by vivid poster displays made under the supervision of Miss Helen Brady, assistant principal, who also correlated conservation with social studies. A colored sound film on conservation was shown as a finale.

Conclusion

Science teaching in the public schools has not recognized nor achieved its full responsibility either in local or in national conservation policy—nevertheless there lies America's future—the solution of our problems of how to use most advantageously, for all of us, our generous endowment of natural resources.

Conservation is the way of life, not only a manner of living, but a philosophy of existence based on the ideals of democracy and born out of zeal for protecting the good life and the wonders of nature for all Americans who live after us, for all peoples everywhere. It is your opportunity to live forever in the lives of happy

people. Green hills, fertile fields and clear pure streams shall be eternal monuments to you as the wind whispers, "Remember!"

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PETROLEUM IN RELATION TO CURRENT PROBLEMS—II. CANADA'S INCREASING PROMINENCE IN THE PETROLEUM INDUSTRY

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Few people realize that petroleum was discovered in Canada about as early as in Pennsylvania. Some claim that the William's well in southwestern Ontario antedated the Drake well and is entitled to rank historically as the first one dug in North America. Be that as it may, the fact remains that the modern petroleum industry had its beginning contemporaneously in southwestern Ontario and western Pennsylvania just prior to 1860. Early production in Ontario was characterized by low rate of yield per well whereas in Pennsylvania gushers came in at shallow depths. The high rewards that characterized early production in the United States, caused by the greater markets as well as by larger output per well, thus attracted capital for expansion purposes much more actively than was the case in Canada.

Development however persisted in Ontario to the extent that about 18,000 wells have been drilled in that province, most of them before the turn of the century. Production per well was generally small and no large discoveries have been made in Ontario or in eastern Canada during the past several decades.

LARGE AREA POTENTIALLY PRODUCTIVE

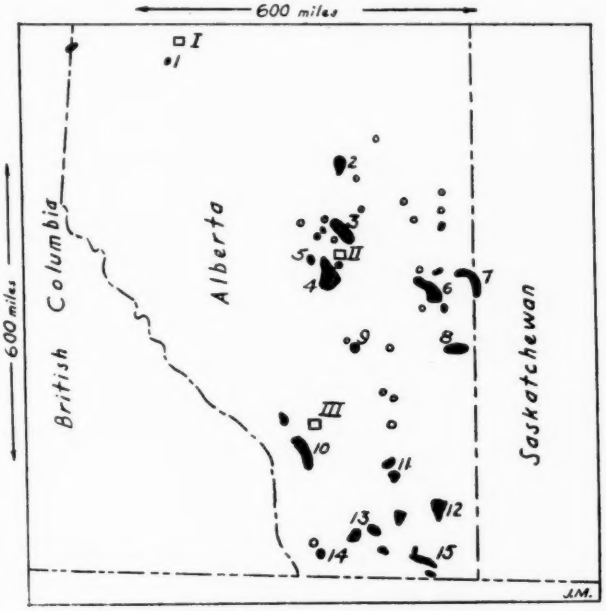
Following World War I, active exploration was begun in the plains area east of the Rockies. It was early recognized that the sedimentaries that constitute the bedrock between the Canadian Shield and the Rocky Mountains provided probabilities of structure conditions favorable for oil and gas accumulation. It is now estimated that the prospective oil territory may include an area as great as the combined total of Texas, Louisiana, California, Oklahoma, and Kansas. The earliest large scale discovery was made in 1920 at Norman Wells far to the north, only 70 miles south of the Arctic Circle; this field was without transportation facilities and was so far from markets that exploitation was not economically feasible.

The pressure for petroleum induced by World War II caused the American government to provide most of the capital, men, and equipment to develop the field, and thus more than 60 wells were brought into production and served to prove reserves in that field presently estimated at about 30 million barrels. High costs and distance from large centers of demand limit the market outlets, and thus the Norman Wells producing area now serves only the nearby mining industry and provides fuel for navigation on the Mackenzie River and some for the few ships that sail the Arctic Ocean.

The discovery of the Norman Wells field in 1920 served to stimulate active exploration thruout the plains area, mostly in the southern portion because of nearness to prospective markets. Altho some small pools were found, the results were not as remunerative as hoped for and progress was slow. A map published in 1928 by the National Development Bureau showed only three natural gas discoveries and two oil pools. A note of discouragement was apparent in a report by the Dominion Fuel Board published in the same year which stated "Oil from our own resources has never provided an appreciable amount of fuel." Nevertheless active exploration continued, and the next few years were destined to provide more encouraging results.

TURNER VALLEY MARKED BEGINNING OF LARGE SCALE PRODUCTION

The first large scale producing area to be developed was the well-known Turner Valley field, discovered as a petroleum producer in 1936 (See map). This field is about 70 miles south of Calgary and has long been the mainstay of Canadian production. It has already contributed about 95 million barrels of oil and estimates indicate proved reserves of about 25 to 30 million barrels still unmined. The highly successful production of Turner Valley quite naturally stimulated extensive exploration activities in the plains of Alberta and Saskatchewan.



OIL AND GAS FIELDS OF ALBERTA PROVINCE

Cities: I. Peace River. II. Edmonton. III. Calgary.

Oil Fields: 1. Normandville. 2. Athabaska. 3. Redwater. 4. Leduc-Woodbend. 5. Golden Spike. 6. Kinsella. 7. Lloydminster. 8. Povost. 9. Stettler. 10. Turner Valley. 11. Princess. 12. Bow Island. 13. Foremost. 14. Pincher Creek. 15. Pendent O'Reille.

Huge sums of money were expended in field investigations and drilling tests during the decade following 1936, but no second "Turner Valley" was discovered altho several small pools were uncovered, just enough to cause hope to survive and thus to maintain continuance of the search for the elusive black gold. The intensive drilling campaign carried on during the ten-year period resulted in bringing in a number of wells, some gassers, some oil producers, and of course many dry holes. Most of the pools discovered were small and the wells were not heavy producers, but now the structure pattern of the plains was being revealed by drilling.

LEDUC DISCOVERY BROUGHT INTERNATIONAL PROMINENCE

Since 1946 wildcat drilling has been rewarded by a number of rich oil strikes, outlining pools that have attained world fame such

as Leduc where the first big pay was reached in 1947, followed by Redwater, Pincher Creek, and Woodbend in 1948, and Golden Spike and Stettler in 1949. Thus the map in the course of three years has been changed from the virtual blank of earlier times to the well spotted map of today, and there is general agreement that the end is not in sight. The proved reserves of petroleum in Canada, estimated at only 72 million barrels at the end of 1946, by January, 1950, were estimated at 1,200,000,000 barrels thus placing that nation third in reserves in the western hemisphere and eighth among the nations of the world.

The petroleum potentialities of Canada are tremendous, and continued development now has become a problem in marketing because the producing areas are but sparsely populated. To reach the industrial portion of the country a pipeline of 16 to 20 inch diameter is under construction to connect Edmonton with the head of the Great Lakes at Superior, Wisconsin, the total length of the line to be 1,180 miles and the estimated cost about 90 million dollars. From Superior to Canadian refineries lake tankers will be used, and two large ones are already under construction. The program now under way is expected to provide Canadian oil to the industrial districts of Ontario in 1951.

The oil discoveries have been attended in Alberta, as in many other places, with discoveries of natural gas also. The gas reserves are estimated at about 7 trillion cubic feet, a reserve which in heat value equals the estimated proved reserves of their liquid petroleum. The marketing problem for the gas is even more difficult of solution than it is for the oil.

PROGRESS AND PROBLEMS

At first thought it would appear that we in the United States should all rejoice with our neighbors to the north in their recently revealed good fortune. The north-central part of our country eastward from Montana is not a petroliferous area and most of it is considered to be permanently barren. Northwestern United States can also be reached by pipelines from the oil and gas fields of Canada at reasonable cost. But here the competitive element becomes apparent because already some pipeline services of gas and petroleum products from southern states have been extended as far north as Minneapolis, and additional projects are under way. Thus the question of international trade becomes the order of the day. It is not the purpose of this paper to discuss the problem nor to take

sides on the question. It is, however, our duty as educators to lead students to see and understand how resources and their development give rise to such problems. It is also our duty to encourage students to study these current developments and the resulting problems with a view to forming opinions on a basis of facts and to become able to defend their opinions thus intelligently formulated.

The development of petroleum and natural gas in Canada to a high commercial potential has been so recent and so rapid that its full economic and social impact has not yet been felt. It has not yet become recognized as a controversial issue. Since much of the progress has been made possible by American (U. S. A.) capital, gradually we shall face not only the question of imports of gas and oil, but also questions of taxation, political influence, control, and probably many others. Is it not the function of educational leadership to inspire students to view such problems rationally and fairly? Is it not then a primary duty to make full use of facts as a basis for thinking? Should not economic geography be constantly alert to the importance of current developments if problems of the near future are to be intelligently considered? In the opinion of the writer, these are questions that should command the attention of secondary as well as of college teachers of any of the various social studies.

MATHEMATICAL SCALE PROBLEMS*

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The earth is so large that the general layout and design of its surface features are beyond the range of man's vision. Only for a few features very close to him can he obtain an accurate impression of their size and other spatial relationships. He does not see even the somewhat more distant features, which are still within his limited range of vision, in absolute relationship, but in perspective, that is in respect to their relative distance and position. In other words, man's problem in visualizing and deciphering the earth's features is much like those confronting a fly who would

* Paper read at the Session on Mathematical Geography, Annual Meeting of the National Council of Geography Teachers in Joint Session with the Central Association of Science and Mathematics Teachers, November, 1950.

alight on the headlines of a newspaper and would try to read them. Man's problem, however, is more difficult since he has an even smaller relationship to the earth than the fly to the newspaper.

The solution to this problem is to represent the earth's surface in a reduced form. Maps are an instrument thru which man obtains this reduction. They are graphic representations of the whole or part of the earth's surface. Of necessity they are many times smaller than the area they depict. The human mind accepts readily and accurately many reductions, without any hesitation. The child immediately recognizes the snapshot of his friend or the picture of a house or tree. These are objects within the compass of his vision. As a result he recognizes the degree of the reduction, altho probably not in mathematical terms. On the other hand, even relatively small parts of the earth's surface cannot be resolved by the eye. Their graphic representation on maps in a reduced form is an abstraction and therefore difficult for the individual to comprehend or to understand realistically.

The scale of a map is the means by which one expresses the degree of this reduction. The concept is a mathematical one. It is an expression of relations between quantities of two different magnitudes: ground distances and map distances. In the beginning the concept may be in relative terms only, such as "longer" or "shorter" and "larger" and "smaller." At advanced levels the concept should become more exact and precise.

Two Categories of Distance

The realization that scale involves two categories of distance is a fundamental and important point. For this reason the first step in understanding scale is the development of a knowledge of map and ground distances. Map distances which are given in small linear units, for the most part in inches in this country, present no particular problem. Ground distances, in contrast, present two problems. First, there is the great variety of them: among others, feet, yards, rods, blocks, miles, kilometers, latitude distance, and longitude distance, the last a variable. Second, except for a few smaller units, these ground units, individually or in the aggregate, are too large for the mind to comprehend directly. For example, a degree of latitude is an abstract ground distance value. Similarly a ground distance of 63,360 inches is without meaning until converted to its equivalent of one mile. Comprehension of ground distances becomes an indirect process related to field and travel ex-

perience and frequently requires a conversion from time factors. The graded training of the student should recognize the increasing difficulty of the map to ground distance concept. The simplest concept is that of map distances to the feet and yards of the classroom. More difficult are those of map distance to the blocks of the community. The more complex ideas are those of miles and of latitude and longitude distances associated with countries and continents.

WAYS OF EXPRESSING SCALE

The three ways in which the relation of map to ground distances can be expressed are well known. In order of difficulty they are the graphic scale, the statement of scale, and the representative fraction. The graphic scale is drawn for the student to see and facilitates visualization. It presents in its subdivisions actual units of map distance marked to represent any of a variety of ground distances. The use of the graphic scale for direct measurement is valuable in developing ideas of linear distances. The statement of scale, that is "inches-to-the-mile," appears to be a simple way, but actually presents difficulties in visualization and is a mixture of linear units. Further difficulty results from the practice of using either the map or the ground distances as unity. For example, "one-inch-to-four-miles," "one-mile-to-a-quarter-inch," and a "quarter-inch map" are all statements referring to the same scale. The representative fraction is the third way and the most advanced mathematically. It is a ratio of a single unit of map distance to the ground distance represented, measured in the same units. The difficulty of the concept, involving ratios and proportions, makes the use of the representative fraction questionable before the high school level. The great advantage of the representative fraction is its universality. It is equally applicable, as long as the same units are used in the numerator and denominator of the fraction, for all linear units whether they are inches, centimeters, verchocks, zolls, or cigarette lengths. If these proportions expressing map to ground distances were simple fractions such as one-half, one-fourth, or one-tenth, they would be expressions with real meaning to the student. Unfortunately they are small fractions which appear forbidding such as 1/10,000; 1/100,000; and 1/1,000,000 and, therefore, lack concreteness. Each of these methods, however, has certain advantages. They complement, rather than supplement, each other. Recognition of this is evidenced by the fact that the scale on many maps is expressed in two or three ways.

THE PROBLEMS OF SCALE CONVERSION

With these fundamentals in mind, scales present two major types of problems. They are the conversion of scale from one system to another and the visualization of scale. Each of these, in turn, may be subdivided into problems of graded difficulty and presented at an appropriate time in the training of the student. The conversion of scales is largely a mathematical problem. It involves methods by which quantities sought are deducible from others which are known. The conversion of the graphic scale to a statement form or the reverse procedure is relatively simple. A statement may be read or estimated directly from the graphic scale in terms of convenient linear units. A statement of the scale can be plotted as a graphic scale.

The conversion of these forms of scale to a fractional scale, or the reverse, presents greater difficulty. In the first place, the numerator of the fraction must be unity. Second, the denominator must be expressed in the same linear units as the numerator. Thus the student must be able to convert readily units of one type of linear measurement into those of another, as for example expressing the length of one or more miles in inches, or the reverse. These are merely practical problems in multiplication and division. In addition he must be acquainted with the mechanics of handling fractions, and finally he must be able to express the values given as a simple equation and solve it. These procedures involve abilities which are taught in the various stages of the elementary and high school mathematics curriculum. The incorporation of scale conversion problems at the proper level within a partly correlated mathematics and geography curriculum can make both subjects more realistic. The knowledge and abilities involved can be utilized to obtain an understanding which is functional rather than purely mechanical.

THE PROBLEM OF VISUALIZING SCALES

The second major type of problem is the visualization of scale. Visualization of scale is the ability to observe ground distances in the landscape and mentally convert or visualize these same distances as map distances on a map of a given scale. It includes also the reverse process of observing map distances on a map of given scale and visualizing and recognizing these same distances in the landscape. In some cases the ability is largely one gained thru field experience and map study. In other cases the ability is obtained

from a combination of training in the mathematics of scale and comparative map study.

Primitive peoples such as the Eskimos and Marshall Islanders had to develop this ability before they could make the maps which they utilize in their travels. I have see an Indian guide in Canada, who had no formal knowledge of scale and who rarely used a map, mentally measure the ground distance to a number of pine-covered points on a lake and after a brief study of a map, point to his location on it. The student, similarly, can learn thru observation and the visualization of distances to make a map or plan of his classroom or immediate community. In the first stages the distances need not be in standard linear units nor expressed as a numerical ratio. The procedure should be as natural as that of drawing a picture of a tree or a house. The distances merely must be those familiar to him and within his range of vision. As his knowledge of linear measurement and methods of expressing scales increases, larger areas and numerical or precise ratios can be utilized. This process, then, is a direct one. Ground distances are observed, and then converted mentally into visualized and actual map distances, or vice versa. To become proficient in the process requires many hours of field experience in map reading. The ability is essential for anyone doing field mapping. It is essential also for anyone who must read a map accurately in the field. It may mean the difference between life and death for the soldier. The present military situation makes some graded training in this process an educational duty.

VISUALIZATION: SMALL SCALE MAPS

Visualization of scale on small scale maps such as one covering a state, continent or the world is a more difficult problem. Some of the linear ground units and most of the distances are beyond man's normal range of vision. Landscape or ground distances are not realities of observation. They are impressions derived by map comparisons or by conversion from travel time experience. Therefore, the process of visualization in these cases must be an indirect one.

Visualization of scale developed thru map comparisons raises the question, "comparison with what?" The comparison to be meaningful, must be made with some constant. A new frame of linear reference must be adopted to substitute for the realities of ground distances which the landscape provides as a constant. In the beginning, a twelve or sixteen inch globe can be used as a con-

stant frame of reference. Others can be used, but the variety of scales used for reference should not be too great, or confusion will result.

There is another element which tends to add confusion to the visualization of small scale maps. It is the distortion and variation in scale which is inherent in any map projection. Without going into the details of the problem, two broad principles should be recognized. First, at the lower and intermediate elementary levels, the scale variation introduced by projections can be and should be disregarded. To do so at these levels requires, however, that the projections utilized be those whose scale distortion and variation from place to place is not excessive. The degree of inherent projection errors must be kept as near as possible within the ability of the untrained eye to measure and to the accuracy of scale comprehension expected at these levels. In the former case, the orthographic projection which is used in a number of elementary texts is an example of good practice. This projection presents on a flat surface the spherical surface of the globe with no more distortion than the eye obtains in looking directly at the globe. In the latter case a number of projections are suitable. The Mercator projection is an example of an unsatisfactory projection at this stage of training. It has not only an excessive degree of scale distortion in higher latitudes, but also a variable scale from one part to another. The second principle refers to the upper elementary and high school level. At these grades scale variation and distortion due to projections should be recognized as existing. The student need not know the exact degree of error involved. He needs to know, however, the relative amount of error which can be determined by a comparison with the basic facts of latitude and longitude distances values on a globe.

Exercises in Visualization of Scales

Two types of exercises should be practiced, using the few scale constants which are selected or available, in order to develop the ability to visualize scale on smaller scale maps. First the student should fix computed ground distances with map distances for well-known and significant features. These mental impressions should then be applied to map distances for other features, in other parts of the world. In other words the student should develop ideas of relative distances among a few given places, so that other and unknown distances will be meaningful and concrete to

him. Second, the more advanced student should develop the habit of associating the ground area of a few states or countries with their map area. Thus, if he knows distances and areas for Illinois at a given scale, those of Korea on another map at the same scale will have greater meaning. These are the reasons why wall maps or textbook maps, particularly at the elementary level, should be on the same scale, if at all possible. Where this is not feasible, the relationship of scales among maps should be maintained as simple multiples such as two or four.

Once the student has developed certain linear and areal impressions for one or two constant scale references, that is, ideas of relative distances and areas, he is in a position to apply these impressions to the visualization of scale for other maps on different and variable scales. This process cannot be prosecuted, however, unless the student is increasing at the same time his knowledge and ability with respect to the other problems of scale mentioned. The mathematical skill involved in scale conversion is particularly important to facility in indirect visualization. The student must be able to compute readily how many times larger or smaller a given map scale is than his reference scale.

The visualization of scale thru conversion by travel time experience is not necessarily a separate process from the preceding one. It involves merely the development of additional mental impressions of ground distances related to map distances. As a result of travel experience, the time required to go between two points is converted to ground distance or vice versa, and in turn to map distance. On very small scale maps, air travel helps to develop this type of scale visualization. Travel by automobile does the same for road map scales. If the student knows it takes two hours of travel to cover a given map distance, his visualization of the ground distance between two other points with twice the map distance becomes more concrete.

CONCLUSION

In conclusion, visualization of scale should be recognized as more than a mechanical process. On the other hand, visualization of scale is impossible without the ability to think mathematically. The inherent problems of map scales are both geographical and mathematical. Understanding comes only from training in both fields, and only by correlation of this training in practical problems at each level of the student's education in the two fields.

THE GLOBAL DISTRIBUTION OF PRIMARY GOVERNMENTAL TYPES

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At present, the democratic way of life is threatened on a global scale by the territorial aggression of Soviet communism. The direct territorial growth of the Soviet Union is less significant than the development of communist satellite states in eastern Europe and in eastern Asia and this in turn is less significant than the possibility that the remainder of Europe and Asia may be subjugated by continuing communist pressure and military aggression. The geographical concentration of political power which has been achieved by the Soviet Union is already great and further advances would create an imbalance of geographic potentials which would be most unfavorable to the United States and to other sovereign nations. The power of the Russian core is being applied on the periphery of the communist area in the way foreseen by Sir Halford J. Mackinder and brings the possibility that the preponderance of world power will be in communist control.[1] Walter Lippmann has pointed out that we fought the First World War to prevent the unification of the power of Europe under the Germany of the kaiser and that we fought the Second World War to prevent the unification of Europe under the Nazi Germany and the unification of Asia under Japan.[2] Nicholas John Spykmann has shown that the unification of Eurasia under a single control is the most serious of all threats to the security of the United States because the United States would then have vastly inferior man power and a subordinate industrial potential.[3] There is little doubt that the territorial distribution of primary governmental types is one of the most significant aspects of regional diversity.

During and since the first world war, our vacillating foreign policy has afforded clear evidence that our governmental personnel and the general public knew too little of the actual characteristics

[1] Halford J. Mackinder, *Democratic Ideals and Reality,* Henry Holt and Company, 1942, and "The Round World and the Winning of the Peace," *Foreign Affairs,* July, 1943, pp. 595-605.

[2] Walter Lippmann, *United States War Aims,* Little, Brown and Company, 1944, p. 41.

[3] Nichols John Spykman, *The Geography of the Peace,* Harcourt, Brace, and Company, 1944, pp. 58-60.

of the governments which existed in Germany, Italy, Japan, China, and Russia to formulate a consistent and effective foreign policy and that they were, generally, handicapped by unawareness of the close relationships between the characteristics of governments and the natural, economic and social conditions in the regions in which they occur. This lack of politico-geographic knowledge and understanding has been a major danger to our society and, yet, little political geography is included in our public school curriculi.

We have faced world problems in the past as a nation of geographical illiterates; but we cannot afford to approach the national crises of the future with the idea that the dangers are caused by evil individuals and, therefore that the problems are to be solved by the removal of such persons as the German kaiser, the Nazi leaders, the Japanese warlords or the members of the Soviet Polit Bureau. The problems are more fundamentally geographic than that! The character of a government is affected by economic and social conditions in the area it occupies and, indirectly thru them, by natural environmental conditions. Our experience in Japan and in Germany indicates that firmly entrenched economic and social conditions must be altered to provide suitable milleux for the kinds of government we hope to see established. In view of the need for politico-geographic information and understanding that we have experienced in the past and are likely to experience in the future, it seems evident that politico-geographic knowledge and understanding should be developed among other end products of public school geography.

THE GLOBAL DISTRIBUTION OF TRIBAL GOVERNMENTS

In many parts of the world, simple tribal governments exist under an overlay of other governmental types. The distribution of tribal governments closely follows the locations of culturally retarded populations which inhabit difficult environments. The tundras and the northern forests of Alaska, Canada and Eurasia, the tropical rainforests of Amazonia, Africa and New Guinea, areas with wet and dry climates in Africa, many deserts thruout the world and some mountainous areas in southern Asia contain such primitive groups and local tribal governments. At the fourth grade level, we commonly begin geographic study with units dealing with the manner in which activities of selected groups of these people are adjusted to their habitats. For example, we show how the foods,

the shelter, the clothing, the tools and the work activities of the people of the Congo are adjusted to climate, vegetation, soil and other natural environmental conditions. It is obvious that a people who practice a self sufficient local economy and carry head packs along forest trails cannot organize a government which will provide streets and highways. It is an equally simple matter to proceed from the little group of huts which comprise the village to the fact that the tribal government does not provide sewers, a public water system, a police department, a fire department, schools or a post office. There is relatively little need for these services and there is little ability to supply them. By such steps, as we teach the geography of primitive habitats at the fourth grade level, we may develop the concepts 1—that governments differ from place to place and 2—that there are geographic reasons for these differences. If the general public had possessed these concepts in the recent past, we might have achieved a more effective foreign policy.

The Global Distribution of Colonial Governments

The actual distribution of colonial government is considerably different from that which many of us have employed in our thinking and teaching and from the concept of it which is commonly held by the general public. Colonial government is government from the outside. The self governing dominions of the British Commonwealth of Nations, Ireland, Canada, Australia, New Zealand, the Union of South Africa, India, Pakistan, Burma and Ceylon are not colonies and we should strive to make our students aware of this fact. On the other hand, large sparsely inhabited portions of Canada, Brazil, Australia, the Soviet Union and elsewhere are governed colonially.[4] It is also evident that many of the communist satellite states which are nominally sovereign are actually governed from the outside by the Polit Bureau and the Russian police. It is important that we give our students accurate information concerning the areas which are not colonially governed and those which are colonially governed.

Many of the colonial governments occur in the restrictive environments in which the tribal governments are located. Many small islands have colonial governments. The majority of the

[4] Richard Hartshorne, "The Politico-Geographic Pattern of the World," *Annals of the American Academy of Political and Social Science*, Vol. 218, 1941, p. 46 and pp. 55-56.

others occur in the zone of culture fragmentation which lies in eastern Europe. All of the areas with colonial government are characterised by political weakness in comparison with the political strength of the areas which exercise colonial authority. The geographical contrast between the colonial powers and the colonially governed areas is striking. Thruout the upper grades and at higher levels of geographic instruction, the conditions which make for political weakness should be developed as component parts of the geographic study of all areas in which colonial governments occur and the conditions which make for greater political strength should be developed during the study of sovereign states and colonial powers. It is important to have our students realize that the end of colonial government in the Philippines, in India, or elsewhere will not be followed, necessarily, by the emergence of governments like those of the United States or the United Kingdom. The factors which produced the original political weakness are likely to remain and to affect the character of government which follows. Our students should not be indoctrinated to believe either that colonial governments should be liquidated or that they should be preserved; but they should know that it will be difficult to achieve satisfactory self-government in the majority of the areas that now have colonial government and that decisions in each case should involve careful evaluation of geographic particulars.

THE DISTRIBUTION OF AUTHORITARIAN MONARCHIAL GOVERNMENTS

Altho authoritarian monarchial governments were once widespread, these governments are now found only in Ethiopia, Egypt, the Arabian Peninsula, Iraq, Iran, Afghanistan, Nepal, Bhutan and Thailand. In these portions of Asia and Africa, political sovereignty has been maintained; but living levels, technical standards and the political effectiveness of the inhabitants are quite low generally. In more advanced areas like the United Kingdom, Denmark, Norway and Sweden, kings may be retained but their authority has been removed. The system of authoritarian monarchy has disappeared in the areas in which higher living levels have been achieved. In the remote past, tribal governments probably existed in all parts of the inhabited world and, in the more recent past, areas which were governed formerly as colonies or as authoritarian monarchies have acquired other types of government. These changes have occurred, generally, in regions in which the

living levels are higher than in the regions which still retain tribal governments, colonial governments, or authoritarian monarchies. In general, colonial governments and authoritarian monarchies provide much less in the way of schools, roads and other governmental services than are provided by other types of government. The evidence indicates that the retention of colonial status or authoritarian monarchial rule is one aspect of general retardation and that it may be explained, in part, by the natural handicaps of the affected regions. In teaching the geography of these regions we should give specific emphasis to the difficulties which retard economic progress and the attainment of political effectiveness by the people generally.

THE GLOBAL DISTRIBUTION OF OLIGARCHIES

The political and economic domination of a twenty per cent white minority over the numerically preponderant colored population in the Union of South Africa and the political ineffectiveness of the depressed castes in the Dominion of India carry the unmistakable hallmark of oligarchial government. Altho suffrage is extended to all persons, 18 years of age and over, in India and some of the discriminations against the depressed casts have been made illegal, much additional progress will be required before India will be a true democracy. In the Union of South Africa at present, the trend is the reverse of that in India and the repression of the colored population is becoming increasingly severe. The distinguishing nature of government in India and in the Union is closely associated with racial and cultural conditions which exist as distinctive geographical attributes of these areas. The situation in the Union of South Africa has distinct bearing upon the colonial problem in much of Africa. In many areas, the external colonial authority has held in check the local white minority and the conditions of the natives are better than they might be if the removal of outside control resulted in the establishment of oligarchial governments like that of the Union of South Africa. Situations containing aspects of oligarchial government have occurred in portions of Latin America with white minorities of relatively high political effectiveness and Indian and mestizo majorities of relatively low political effectiveness. In parts of the United States with large proportions of negro inhabitants there have been aspects of racial oligarchial government. The existence of marked social cleavage on the basis of race or religion is a distinctive geographic attribute

in many portions of the earth that affects human relations significantly. Our teaching should deal with these important geographic realities. Knowledge of the distribution of these areas of social stress and the problems related to it are likely to be of more utility to our students than many of the aspects of economic geography which we have been stressing in our treatment of these regions.

THE GLOBAL DISTRIBUTION OF PERSONAL DICTATORSHIPS

Government by personal cliques appears to be a distinctive geographic attribute of Latin America. At present, the only government outside Latin America which can be clearly classified as a personal dictatorship is that of Syria; but there are other areas which reveal aspects of personal dictatorial government. In Latin America, the personal dictatorships appear as succession phenomena, following colonial governments with or without intervals of somewhat democratic governments. The rise and decline of the personal dictatorships have been commonly abrupt and the significance of the partially democratic intervals may be less than we commonly imagine. For example, Brazil was a dictatorship controlled from 1935 to 1945 by Vargas who came to power by armed force and Vargas has just been elected president under conditions of limited suffrage which may be considered semi-democratic; but it may be assumed that there will be relatively slight difference between Vargas, the dictator, and Vargas, the elected president. Some of the dictatorial groups which came to power by armed force have served their people well. For example, the military junta which controls Venezuela today seems to be making sincere efforts to raise general living levels. Unfortunately at times and in places, some dictators have used their power in a manner that has been severely exploitative and political uncertainty and instability have had widespread dilatory effects. Who can plan intelligently for the future when the character and policies of the government are unknown?

In part, environmental difficulties help to explain the existence of economic and social conditions which have made the attainment of democracy and stabilized government difficult.[5] The prevalence of low living levels, the large masses of essentially propertyless people, the high percentages of illiterates, social cleavages along racial lines, the absence of large middle and professional classes

[5] Donald Marquand Doger, "Roots of Revolution in Latin America," *Foreign Affairs*, January, 1949, pp. 274-288.

and the concentration of land ownership and other wealth and political effectiveness among a few families have been factors in the ease with which individuals have been able to seize control of governments. In general, the geographic complex in much of Latin America has been as unfavorable to stabilized democratic government as it has been to high per capita production.

In Mexico, Brazil, Chile, Argentina and Uruguay, progress has been made toward semi-democracy and class government. The aspects of personal dictatorships are less pronounced in the areas with the greatest per capita productivity and the governmental services are more highly developed. Democratic constitutions have existed at some time almost everywhere in Latin America and in many areas there have been persistent efforts to achieve an illusive goal. Uruguay seems to have made the most progress; but even there the level of democratic attainment is not comparable to that in Canada, the United States, or the United Kingdom.

The fact that geographical conditions in southeast Asia are generally similar to those which encouraged dictators and political instability in Latin America is a grim reality. China, Korea, Japan, the Dominion of India, Pakistan, Ceylon, Burma, Indonesia and the Philippines may experience many of the difficulties which have beset parts of Latin America. The governments in Indonesia, the Philippines and Burma already reveal tendencies toward personal dictatorship and political instability. Limited resources, in relation to the vast populations in Asia, are a basic cause of poverty which is likely to adversely affect political stability and to make the achievement of democracy exceedingly difficult. Our teaching of the geography of Latin America and Asia should emphasize the relationship between general geographic conditions and the problem of securing satisfactory governments.

THE GLOBAL DISTRIBUTION OF IDEOLOGICAL DICTATORSHIPS

The governments in Argentina, Brazil, Chile, Uruguay and Mexico present aspects of ideological dictatorship. Since these are the most economically advanced areas of Latin America, the occurrence suggests that ideological dictatorships tend to develop in areas in which per capita productivity is intermediate and that tribal governments, colonial governments, authoritarian monarchies, oligarchial governments and personal dictatorships occur in areas that are more retarded economically than the areas with

ideological dictatorships and that the democracies occur in areas that are more advanced economically.

Spain, Yugoslavia, the Soviet Union, Pakistan and China, in the Old World, also have ideological dictatorships. Prior to the war, Germany, Italy and Turkey were also ideological dictatorships. What have all these areas in the New World and in the Old World in common? They present great geographical diversity and little geographical similarity except for the fact that in each of these areas the people have recently experienced a little improvement of economic status and have aspired to more without possessing a geographical base which was sufficient to permit the attainment of the goal. In each, a political minority has attained power by force in a time of crisis and has launched broad programs to radically transform the way of living of an entire people. In each of the ideological dictatorships, there has been an exceedingly rapid expansion in the field of governmental services and of control by government. The individual has lost position and the state has absorbed it. Nevertheless, the actual level of governmental services and services obtained outside the field of government seems to be below that obtained in the democracies.

We cannot be certain concerning the precise ecological relationships of the ideological dictatorships; but these areas are too significant in the affairs of the world to be neglected in our teaching. We should do our best to describe the political conditions as they actually are and to have our students think of these political actions in their natural environmental, economic and social settings. This procedure will at least contribute the ideas that the ideological dictatorships are different from other types of government and that they exist in geographical settings which are also different.

THE GLOBAL DISTRIBUTION OF DEMOCRACIES

The United States, Canada, Australia, New Zealand, Iceland, Ireland, the United Kingdom, France, Belgium, the Netherlands, Norway, Sweden, Finland, Denmark, Switzerland, Italy, Israel and perhaps Uruguay have achieved the maximum progress toward political democracy. Brazil, Greece, Turkey, Burma, Indonesia and the Philippines have achieved a lower level of political democracy and in many other areas there are significant movements toward political democracy; but in all of these areas democracy is less

fully realized and is less firmly intrenched than in the areas listed first. The areas in which democracy is most firmly established and most fully achieved are also the areas of maximum per capita production, maximum living levels and maximum governmental service.

Those who live in these more favored lands have had many opportunities to observe some of the problems which occur in trying to make democracy work. These problems are very great in some of the poorer agricultural areas of the United States and in our urban areas where there are extensive slum districts and acute economic stress. In general, the difficulty of making democracy work increases with poverty, economic stress and lack of education. We should strive to have our students recognize the blessings of democracy; but we should make them realize how much simpler it is to achieve democracy in the lands which possess the most fortunate geography and how many geographical handicaps make the attainment of democracy difficult in much of the world.

Conclusion

There is evident interrelationship between the global distribution of primary governmental types and other aspects of global geography; but no teacher of geography should entertain the idea that geography determines the distribution of governmental types or that there will be no changes in the global distribution of governmental types. Since the First World War no less than two thirds of mankind have experienced the kind of radical break with the past which occurs when one primary governmental type is displaced by another primary governmental type. Eire, Iceland, Finland, the Arabian nations, Pakistan, India, Burma, Ceylon, Indonesia and the Philippines have moved from colonial status to sovereignty. Esthonia, Latvia, Lithuania, Poland, Czechoslovakia, Rumania, Bulgaria, Hungary and Albania have moved from sovereignty to colonial status. Mexico, Chile, Argentina, Brazil, Portugal, Spain, Germany, Italy, Turkey, Yugoslavia, the Soviet Union and China have experienced the rise of ideological dictatorships. Japan is experiencing an attempt to establish a true democracy. The extent of political change which has occurred is arresting. It would be folly to assume that there will not be more change. If we are to improve the global habitat so that it will be a safe dwelling place, there will need to be extensive changes in its political organization.

As teachers of geography it is our job to provide our students with working knowledge of the present distribution of governmental types and understandings of the ecology of these distributions. It is only with knowledge and with understanding that we can hope to deal with the critical politico-geographic problems of our age. In our time, no phase of geographic study is more important than the study of political geography and no phase has greater right to inclusion in public school geography curriculi.

AN EARLY GERMAN GEOGRAPHY BOOK

WILLIAM F. AMANN
Rutgers University

During the past summer this writer had an opportunity to read and examine one of the early German geography books. As far as could be ascertained, only a few copies (perhaps only two) of this volume still exist, one of them in the British Museum in London. This interesting book which is owned by Mrs. Greta Richter, Milltown, New Jersey, has been in her family for several centuries.

The first page of this volume contains the coat of arms of a family, the von Krebs, and a dedication to one of its members by Johann Bussemacher, printer of the city of Cologne in the year 1603. On the next two pages follows a highly interesting and, in many respects, modern address to the prospective readers by Matthis Quad, the author of the book. He believes that his contemporaries have finally outgrown the "childhood stage" of culture, since they gradually become curious about possible benefits to be derived from human activities before actually engaging in them. In other words, Quad assures us that possible benefits are the best incentive for learning. But reading books is still for many boredom instead of pleasure. Once again, Quad has an answer, one by which many modern writers, publishers and educators might benefit. He claims that "content alone does not make a book." In order to attract and stimulate the reader, a book must also provide "pleasure"; it must be of tasteful form and binding and must be written in a pleasant, agreeable style. Many books, the author tells us, are highly learned, but have no readers because of their bulky form and dull and difficult style.

In recommending the reading of geography books, Quad assures us that such reading is both profitable and enjoyable. This

is especially true of those people who cannot travel. Without risking danger, sickness and other hazards of travelling, such people can enjoy reports on other countries, cities and peoples as if they had been there themselves. In addition, the reader gathers interesting and valuable information. He learns about the size and shape of other countries and places, about rivers, about the customs and habits of peoples. Those who desire specific information concerning size and distances are not forgotten. A detailed discussion provides the reader with unfailing methods and information to be employed in the study of maps. In conclusion the author recommends geography books to all classes of people, but especially to merchants, travellers and generals. Referring to his own work, Quad emphasizes that many things have been reported here for the first time. Guarding against criticism and possible omissions, he assures us that we would need a "tremendous donkey to carry a book containing all things with no omissions."

An alphabetical list of 82 maps with their respective page numbers follows this introduction. These maps are not arranged as to continents, but continents, countries and states are mixed.

The work proper, which is saturated with a deep religious spirit, begins on page one with a description of the entire world. The world, composed of water and land, has been shaped by God into a ball which is suspended in the air. The heavens with all the stars, the sun and the moon move around this "world-ball." God, the greatest architect, has fashioned this ball in such a manner that man, no matter where he stands, feels as if he were on an absolutely flat and even surface. Our forefathers, the author continues, divided this world into three parts, Asia, Africa and Europe, which Quad calls peninsulas. This was an excellent division, since no division could be more definite and accurate than one faced by great bodies of water.

Since our forefathers knew of no other continents, this threefold division held until the time when Spanish and Portuguese explorers, with God's help, found "two or three" additional continents, Peruvia, America and the "*Suider Welt*" (the southern world). Consequently, we have now seven continents—Europe, Asia, Africa, Australia, Peruvia, America and Arctia. This world can also be divided into the "eastern world," "the western world," "the southern world," and "the northern world." The eastern world again falls into Asia, Africa and Europe. The western world comprises Peruvia which, according to the author, resembles Africa, and America which could be compared with Asia. Little

is known about the southern section and, therefore, nothing definite can be said about that part of the world. The smallest of all continents is the northern world. Added to this general discussion is a beautifully executed map which is artistically framed. The upper part of this frame contains a Latin inscription: "A picture of the lands of the Earth in imitation of Gerhardus Mercator." On the lower part of the frame we read a quotation by Cicero: "The splendor of the entire world is the greatest thing to behold." In the left-hand corner of the map we find a fine picture of Christ holding the "world-ball" in His right hand. The inscription reads: "Our Jesus Christ the architect of the entire world, the redeemer and the future judge and savior."

The following discussions of the various continents and countries are all accompanied by highly interesting maps. These discussions are chiefly concerned with the description of rivers, lakes and mountains. Little space is given to the various peoples themselves. Some of these discussions are followed, we might say, by bibliographical material. The reader is referred to various other works from which he might derive additional information.

The discussion of America is largely the story of Columbus, his relations with Queen Isabella of Spain, and his adventures. The author tells us that the borders of America are still unknown, especially in the north. In most parts of this strange country the people are cannibals and "serve the devil." Mexico is by far the most beautiful, the gayest and the most cultivated part of America. All tribes to the north of Mexico are, in the author's words, "uncouth barbarians."

The rest of the book contains a series of exquisite drawings and symbolical pictures. The first drawing presents a finely executed compass, which is followed by an extremely detailed discussion of the compass. The first picture shows us a magnificent insignia of an "honorable, careful and wise councilor of the city of Cologne." To the left of the insignia stands the councilor's wife, to the right the councilor himself. The next picture is a symbolical presentation of spring. In the center towers the goddess Venus who "gives nourishment and takes care of all lovers." Summer is also presented and here the goddess Ceres dominates the picture. Fall is ushered in by Bacchus. Winter is personified by a tall, haggard, severe-looking old man. The following picture symbolizes the light of God which pierces all darkness, and the last two pictures present symbolizations of the sense of hearing and of feeling.

GEOGRAPHY AND THE PAST

FRED KNIFFEN
Louisiana State University

Few geographers would oppose the proposition that their field deals primarily with the present. Fewer would object to the concept that geography is concerned fundamentally with spatial similarities and differences. Most assume that consideration of time sequences falls in some branch of history.

This paper is a plea—not the first one—for more attention to the element of time in the study and teaching of geography. There is an historical geography, that is, a geography of the past, that has little or no bearing on the present. For example, the geography of many Indian tribes for early periods of American history has no discernible continuity in the modern geography of the same areas. Whatever valuable lessons or comparisons it may afford, the geography of these extinct peoples had little to do with guiding the development of the present.

There is another kind of geography of the past that must be considered in order to understand the present. Without the perspective afforded by a knowledge of the developments leading up to it, the present lacks a vital dimension and certainly the future can be projected with little assurance. The absence of a time-range concept compresses expanding novelties together with fading relics into a common flatness. The geographical scene is likely to be regarded unconsciously as fixed and changeless when actually it is constantly in a state of flux.

NATURAL AND CULTURAL FACTORS

The geographical complex is the product of two sets of factors, one natural and the other cultural or human. Relief, soils, vegetation, climate, and other natural qualities and agencies are generally self-evident. The cultural factors: tradition, economy, skills, historical accident, evolutionary change, and the like, are not so easily observed, hence likely to be largely disregarded. Failure to give due weight to both groups of causal elements limits comprehension and invites false conclusions.

The cultural factors, both singly and in combination, are understandable only in the light of their origin and functioning, which implies an examination of the past. Simple examples come readily to mind: Green lawns in water-poor California were introduced by

Anglo-Americans from humid areas. The log cabin was unknown in colonial America until introduced by Swedes and Germans. The system of land division seemingly designed for south Louisiana because it so beautifully fits natural conditions, originated in Europe

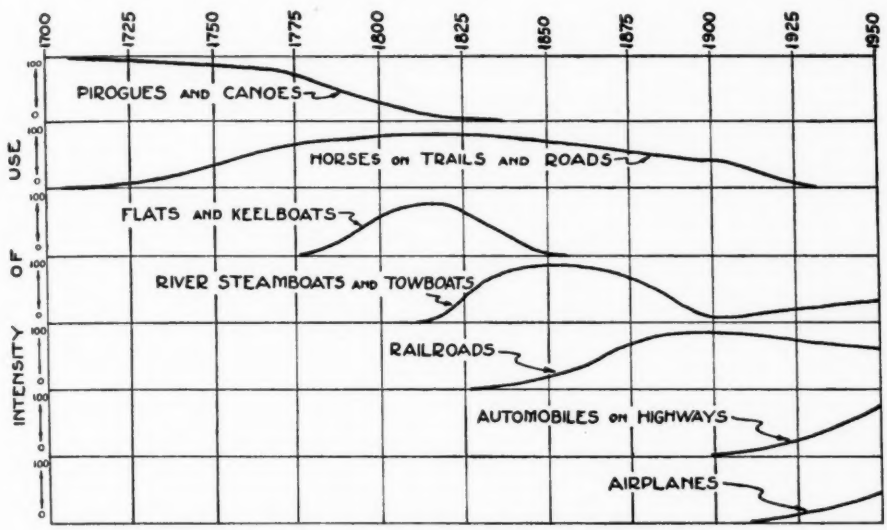

FIG. 1. The development of transportation in the lower Mississippi Valley, 1700-1950.

and appears in all French colonies in America. Skyscrapers in prairie towns stem from the influence of New York on the American urban pattern. Most barns surviving in towns have been adapted to serve as garages, quite distinct in appearance from those built originally as such. New Englanders transferred their whole material and non-material complex of ways to certain areas of the Middle West.

Simply to read its written history is normally insufficient background for the geographical understanding of an area. Were histories to deal with folkways rather than political events, their usefulness to the geographer would be greatly enhanced. As it is, the items important to the geographer are generally obscured by a great mass of, to him, non-pertinent details. However, any enterprising teacher or supervisor can segregate materials that illuminate the past amply for the needs of geography. Two graphic representations of readily available data are here presented.

SAMPLE PROCEDURES

Figure 1 traces the development of transportation in the lower

Mississippi Valley for the 250 years between 1700 and 1950. For any year the student can find the means of transportation serving the needs of the time. He can see readily which type or types were increasing in importance and which declining. He grasps the concept of cultural lag in the hanging-on of outmoded technical devices. A sense of time perspective brings depth to the understanding of the present geographic scene. It is possible to project with some confidence from the past thru the present into the future.

Figure 2 shows the spread of the range-cattle complex from south Texas after the Civil War. There is implied the transfer of a whole cluster of traits and practices: special breeds of horses and cattle, methods of handling them, costumes, equipment, wagons, fences, and buildings. Dates indicate the rate of progress of the movement. By inference, other areas where the range cattle industry is established must have drawn it from some source other than Texas, probably from Mexico directly, or from the eastern seaboard states. The student may be stimulated to think of other practices, customs, or beliefs that accompanied the range-cattle complex.

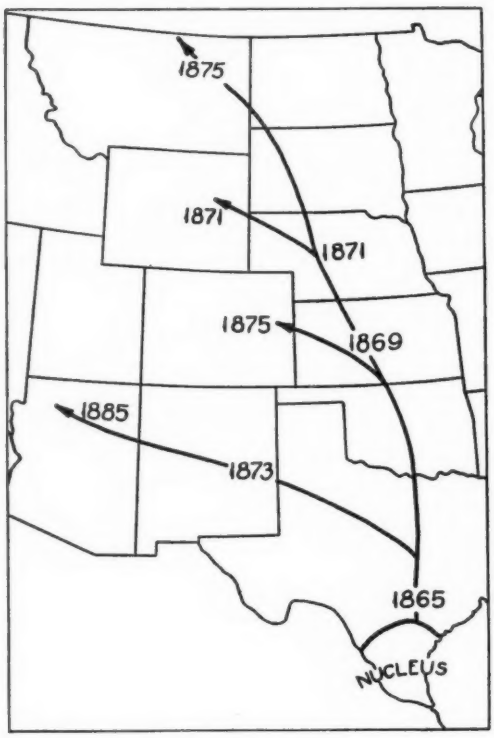

FIG. 2. Spread of range cattle complex from Texas after 1865. The dates suggest a greater precision in timing than is actually possible.

SUGGESTED TOPICS

Transportation is but one of almost innumerable significant subjects for which historical information is available. Architecture, field agriculture, manufacturing techniques, and highway construction are among others that may be treated graphically. South Texas is only one of a number of culture nuclei in the United States. Some others are New England, the Mid-Atlantic states, tidewater Virginia, Salt Lake City, and modern New York City. Working quite independently, the stu-

dent may engage in exercises certain to enlarge his appreciation of the place of the past. He may group the older place names on a map of North America according to European nationalities represented. He may compare state road maps for different periods to get an idea of the evolution of the highway system. He may classify buildings in his own town according to age, style, function, and relative importance and popularity.

CONCLUSION

Consideration of time changes must inevitably make for a richer and fuller geography. It contributes to a better understanding of the present and an increased ability to project into the future. It curbs a dangerous tendency to find too-ready causal relationships between man and nature, and instills a respect for historical process.*

GEOGRAPHICAL PUBLICATIONS

Preston E. James. **Latin America,** Revised Edition. The Odyssey Press, New York. xvi and 848 pp. 64 pp. of illustrations. 153 maps. 1950. $6.00.

Altho the organization of the content material in what was an outstanding textbook in Latin American geography as early as 1942 has not been changed in this 1950 revised edition, major contributions are found in the new material with its new slant. While the earlier edition was prepared and published in a period when the western world peoples particularly were engaged in conflict, this new edition has been geared to present problems. Recognition is given to the fact that social, political, as well as economic problems have increased in number and scope.

Expansion on the geography of Middle America is gratefully welcomed; it is extremely more adequate than in the early edition and of decidedly high merit. New specific area developments have been brought into the book, for example the steel industry in Chile.

Four sheets of maps, one to each side of a sheet, eight maps in all, have been added and placed in a pocket on the back cover. These maps should prove to be very valuable tools in the hands of teachers. Population Density of Middle and South America, Surface Configuration, Natural Vegetation and Land Use are the map titles. Altho only four sheets are provided, the same sheet does not contain the same title or subject on both sides. Hence both Middle America and South America Land Use maps can be used together.

Maps in this edition bear the same figure numbers as in the 1942 edition, altho maps on Middle American Population and Middle America Present-Day Racial Composition have been added.

The print is smaller, the pages greater in number, the price of the book one dollar higher, but the increased cost in no way compares with the increased value of this fine book.

HENRY J. WARMAN

Clark University, Worcester, Mass.

* Historical process, as here used, implies no more than time sequence.

THE NATIONAL COUNCIL AT WORK

A large part of the work of the National Council of Geography Teachers is done thru committees. These committees may be divided for convenience into two groups. The first group is a large number of temporary or annual committees which are appointed each year to do a specific type of work for the National Council. The second group is a long list of standing committees whose terms of office extend over several years, and who are carrying on certain responsibilities for our national organization, or who are working out various problems.

The following is a list of the standing committees for 1951. In most cases the functions and work of these committees can be understood and interpreted from the name of the committee.

1. *Committee on the Distinguished Service Award.* H. O. Lathrop, Illinois State Normal University, Normal Illinois; George B. Cressey, J. Russell Whitaker, Otis W. Freeman, George J. Miller, M. Melvina Svec.
2. *Planning Committee.* Mrs. Katheryne T. Whittemore, Department of Geography, New York State College for Teachers, Buffalo, New York; Thomas F. Barton, Alice Foster.
3. *Publications Committee.* M. Melvina Svec, Department of Geography, State Teachers College, Oswego, New York; Loyal Durand, Jr., Henry J. Warman, Thomas F. Barton.
4. *Director of Public Relations.* J. Warren Nystrom, Department of Geography, University of Pittsburgh, Pittsburgh 13, Pennsylvania.
5. *Committee on Inquiries.* Zoe A. Thralls, Department of Geography, University of Pittsburgh, Pittsburgh 13, Pennsylvania.
6. *Research Committee.* John Garland, Department of Geography, University of Illinois, Urbana, Illinois; Clyde Kohn, Zoe A. Thralls, Earl B. Shaw, William Berry.
7. *Committee on Survey of Research in Geographic Education.* Henry J. Warman, Graduate School of Geography, Clark University, Worcester, Massachusetts; F. K. Branom, Otis W. Freeman, Ruth H. Stanley, V. Calvon McKim.
8. *Committee on Geographic Education in the Secondary School.* Lillian Worley, Department of Geology and Geography, University of Tennessee, Knoxville 16, Tennessee; Halene Hatcher, Ina C. Robertson, Frances M. Hanson, Flora Dutcher.
9. *Committee on Aviation and Geography.* Richard L. Tuthill, Department of Geography, University of Kentucky, Lexington, Kentucky; A. K. Botts, Clifford MacFadden, John W. Morris.
10. *Committee on Compilation of Suggestions and Bibliography for Use by Curriculum Committees.* Mamie L. Anderzhon, 112 North Marion Street, Oak Park, Illinois; Annice D. Elkins, Monica Kusch, Villa B. Smith.
11. *Committee on Preparation of Lists and Bibliographies on Motion Pictures for Geography Teaching.* Thelma Waddle, Board of Education, Pittsburgh Public Schools, Pittsburgh, Pennsylvania; E. E. Hall, Lavina Henderson.
12. *Committee on Preparation of Bibliographies on Lists of Maps.* Mrs. Katheryne T. Whittemore, Department of Geography, New York State College for Teachers, Buffalo, New York; Margaret Chew, George Corfield.
13. *Committees on the Preparation of Lists and Bibliographies on Still Pictures.* Mary Jo Read, Department of Geography, State Teachers College, Milwaukee, Wisconsin; Byron K. Barton, Mary Beecher, Cyril Stout.
14. *Committee on Standards of Teacher Preparation and Certification.* Ina C. Robertson, Department of Geography, State Teachers College, Valley City, North Dakota, Vera Dean, Earl B. Shaw, Clyde F. Kohn.

15. *Committee on Tests.* Viola M. Bohn, 110½ Avenue C. Bismarck, North Dakota; John J. Astuno, Arther C. Carthew, Berenice Caspar, Robert S. Funderburk, Lynn H. Halverson, Mrs. Cordelia Harbeson, Homer Knight, Odelle Zigrang.
16. *Committee on Committees.* Mrs. Katheryne T. Whittemore, Department of Geography, New York State College for Teachers, Buffalo, New York; Earl B. Shaw, Alfred M. Meyer.
17. *Committee on National Council at Work.* Earl B. Shaw, State Teachers College, Worcester, Massachusetts; Floyd B. Cunningham, Thomas F. Barton, C. Langdon White, Katheryne B. Whittemore, Alfred M. Meyer, M. Melvina Svec, Loyal Durand, Jr., H. O. Lathrop, Clyde F. Kohn.

H. O. LATHROP, *President*

GEOGRAPHICAL PUBLICATIONS

A. M. Nielson. **Economic and Industrial Geography.** Pitman Publishing Corporation, New York, 1950. xxiii and 704 pp. 8 topographic plates; bibliography and index. **$6.75.**

This book is a revision of *Fundamentals of Economic Geography* with added chapters in Economic and Industrial Geography. The material represents the author's accumulation of data during his twenty-five years of teaching and reflects his ability to adjust his thinking to criticisms of students and colleagues over this period. Mr. Nielsen attempts to use the "causal factor" or the "causal point of view" in explaining the "inter-relationships, in this economically interdependent world, between intelligent utilization and conservation of the declining supply of many natural resources."

The book is particularly designed to meet the needs of the business school student. It seems to be planned with the idea in mind that the student will take only this one course, or at least this will be the beginning course. It is presumed that this is the reason why the first 176 pages of the book are devoted to the systematic study of physical geography. In this section there is a lack of world-wide distributional maps to show the areas of the world in which these physical phenomena occur. Obviously any of the recent good school atlases could be used for this data. In the physical section, the diagrams of pressure areas on pages 148 and 150 are not too clear, especially the anticyclonic diagram, which shows the wrong direction for the circulation of air. The approach to the climates by the use of the "climatic factor" as a criteria for classification is an admirable start, but the material should have been developed further to actually define the regime and give the whole world-wide distribution of each type. The economic geography section of the book is excellent and utilizes the commodity as the basis for discussion. The review questions and discussion problems are well organized and should provide any teacher of economic geography with a fund of material and a method of procedure which should make a profitable and interesting course in the subject. Here again one feels the lack of world-wide distributional maps of the various commodities.

JOSEPH E. WILLIAMS

Stanford University

Gertrude Whipple and Preston E. James. **Neighbors on Our Earth, Latin America and the Mediterranean.** The Macmillan Company, New York, 1950. 346 pages, 208 illustrations.

This, the fifth book in a series of basal texts, is written for the sixth or seventh grade, presumably. As the title suggests, it is essentially a geography of Latin America,

for only about a fourth of the book deals with the Mediterranean—Spain and Portugal, Italy, Greece and the northern fringe of Africa. The authors explain their selection of regions to be studied together because of their "common heritage of Mediterranean culture." The subject matter is divided into fourteen units, excluding introductory and transitional sections which purport to make the influences of the historical and cultural background clear to the pupils.

Like its predecessors this text is abundantly and colorfully illustrated. Only a few openings are without pictures or maps. Of the 208 photographs, 43 are in color. In addition to the usual continental maps showing relief, climatic conditions and vegetation, there are about a dozen large-scale sectional maps emphasizing surface configuration, the location and sites of cities, lines of communication, or the distribution of products. Numerous small maps show such cultural items as the location of plantations, transportation lines and city patterns. Physiographic diagrams give meaning to such terms as alluvial fan, the canyon site of La Paz, and the reservoir and power plant of Santos.

Since few suggestions for the use of these illustrations are embodied in the text, the teacher needs to plan map and picture reading experiences for each unit. To avoid misunderstanding some maps should be oriented with the globe (see pages 13 and 116), areas shown on large-scale sectional maps should be located on continental maps, and the data of many pairs of maps should be given more meaning by comparison. All visual aids should be synchronized with the reading materials to aid the pupils in gaining understandings of the "complex man-land relationships."

RUBY HARRIS

Eastern Illinois State College

Roderick Peattie, **The Teaching of Geography: A Dynamic Approach.** Appleton-Century-Crofts, Inc., New York, 1950. 185 pages. Index.

Roderick Peattie's *The Teaching of Geography* is an unusual and challenging book. It should be read by every teacher from the elementary grades thru the college. After reading this book, if a teacher is not stimulated to do a better job, then he is already a dead teacher.

Roderick Peattie always writes simply, clearly, yet vividly and dynamically. He has surpassed himself in this little volume. In it he sets forth his idea of geography and his philosophy of teaching. He discusses and illustrates a few basic principles of good teaching. These are: 1. teach a few points at any one time but teach those well, 2. dramatize—make landscapes and people live, 3. teach the individual, and 4. provide activities because the students learn by doing. He practices what he preaches. Every chapter is followed by activities which extend the student's background and also force him to apply the ideas presented.

Mr. Peattie stresses the importance of the teacher's background. The illustrations given in each chapter and the bibliography at the end of each chapter will aid the teacher in acquiring that extra margin of knowledge so necessary for good teaching.

This is a book for the experienced teacher. Mr. Peattie evidently is not familiar with the modern geography courses of study and the modern textbooks for the elementary grades. The basic principles of teaching apply at any teaching level but all of his illustrations and topics, such as "Teaching Climates and Seasons," "The Intellectual and Cultural Value of Physiography," "Geography of Mining," Geography of Commerce" contain excellent suggestions for high school and college teachers. They do not fit into the elementary level. The elementary teacher will get background, but must work out the application of the principles on the level of his pupils.

ZOE A. THRALLS

University of Pittsburgh